WG#11: Collaboration In Synthetic Spaces

Problem Description / Technical Scope

- **Define Synthetic Environment that:**
  - Supports
    - Activity of Collaboration
    - Activity being Collaborated
  - Supports Collaboration among
    - Humans
    - Agents
    - Objects
  - Establishes level playing field for all

Problem Description / Technical Scope

- **Models enable**
  - Analysis
  - Automation

=> Models of

  - Activity of Collaboration
    - "Portable Contexts"
  - Activity being Collaborated
    - "Domain Models"

Problem Description / Technical Scope

- **"Portable Contexts"**
  - Kinds of Collaboration
    - brainstorming
    - design
    - contract negotiation

Problem Description / Technical Scope

- **"Portable Contexts"**
  - Kinds of Collaboration
    - brainstorming
    - design
    - contract negotiation
  - Where is person coming from
    - roles and responsibilities
    - agenda, priorities, win conditions
    - filters, assumptions
    - expertise/lack of expertise
      - domain-models, burned fingers

Generic Design Support Processes

- **Automation**
  - Completion of Partial Design
  - Generation from Declarative Specification
- **Analysis**
  - Getting Feedback on Incomplete Designs
  - Getting Feedback on Inconsistent Designs
  - Trade-off Analysis
- **Collaboration Management**
  - Merging individual work into evolving design
  - Managing Versions

Key Technical Challenges

- **Creating Synthetic Spaces**
  - Merge
    - Sensor, real-time communication
    - Shared Objects
    - Computational Agents

WG#11: Collaboration In Synthetic Spaces

Key Technical Challenges

- **Creating Synthetic Spaces**
  - Merge
    - Sensor, real-time communication
    - Shared Objects
    - Computational Agents
  - Establish “Physics” for synthetic space
    - Rules of interaction
    - Visibility of Activity
      - enables awareness (capturable)
      - allows collaboration (processable)

      => Activity Visibility supported by Collaboration Infrastructure

Key Technical Challenges

- **Deeper Models of Human Capabilites**
  - How humans create and use different representations & modalities
    - Establishing conventions and shared models

    => Increasing cognitive bandwidth
  - Appropriatness of representations & modalities to particular collaborative tasks
    - Naturalness
  - Division of Responsibily and Roles among agents and humans

WG#11: Collaboration In Synthetic Spaces

Key Technical Challenges

- **Utilizing Virtual Space Paradigm**
  - Bring Tools & Resources into Collaboration Space
    - Activity Visibility
    - Common Semantics
    - Opportunity for Process Automation
  - Provide Powerful Support for
    - Integration of Multiple Views
    - Transaction Management
    - Version Control
    - Design Rational Capture

Key Technical Challenges

- Creation & Merging of “Portable Contexts”
  - selective sharing
  - impedance matching
  - time/resource management
    - agenda negotiation
    - collaboration forking/joining
    - control
  - progress tracking
    - consensus
    - understanding
    - models

Key Technical Challenges

- Soft Migration Boundaries
  - Individual <--> Group
  - Physical <--> Virtual World
  - Local <--> Shared
  - One tool <--> Another tool